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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/817,622
Filing Date: March 26, 2001
Appellant(s): CHITAYAT ET AL.

MAILED
DEC 1 7 2004
GROUP 2800

Himanshu S. Amin
Reg.No.40,894
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 20 October 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of the claimed subject matter of independent claims 1, 11, 16, 17 and 22 contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner applies NEW GROUNDS OF REJECTION in this answer. Applicant must, within two months, either: 1) Request that prosecution be reopened by filing reply under 37 CFR 1.111; or 2) Request that the appeal be maintained by filing a reply brief, to avoid sua sponte dismissal of the appeal as to the claims subject to the new ground of rejection.

The NEW GROUNDS OF REJECTION are as follows:

A. Claims 1-4, 6-10 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmer (US 4,234,831) in view of Spinner et al. (US 5,771,174) and Mizutani (US 5,532,533).

B. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174) and Mizutani (US 5,532,533).

C. Claims 1-4, 6-10 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174), Gerard (US 4,751,437) and Mizutani (US 5,532,533).

D. Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo in view of Horikoshi et al. (US 5,142,172), Gerard (US 4,751,437) and Spinner et al. (US 5,771,174).

(7) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Prior Art of Record

4,234,831	KEMMER et al.	11-1980
4,644,205	SUDO et al.	02-1987
4,751,437	GERARD	06-1988
5,142,172	HORIKOSHI et al.	08-1992
5,532,533	MIZUTANI	07-1996
5,771,174	SPINNER et al.	06-1998

(9) Grounds of Rejection

As noted above, NEW GROUNDS OF REJECTION are applied to the appealed claims in this examiner's answer. Briefly, with regard to the rejection of independent claims 1, 11, 16, 17 and 22 over multiple references, the secondary reference Spinner is now interpreted as teaching a "network interface" comprising communications transceiver 72, which is part of actuator controller 30 (Fig.4). Further, with regard to the rejection of dependent claims 3 and

6 over multiple references, teachings in the base reference Kemmer are now applied. The NEW GROUNDS OF REJECTION are as follows:

A. Claims 1-4, 6-10 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmer (US 4,234,831) in view of Spinner et al. (US 5,771,174) and Mizutani (US 5,532,533). Kemmer teaches an integrated rotary-linear actuator system, comprising: a plunger (rotor 3) movable along and rotatable about a longitudinal axis extending through the plunger (and shaft 6); wherein the plunger 3 is supported against a motor support (e.g., liner 7 & flange 9) via bearings 4 and 8 (Fig.1); a coil system having two sets of coils S1-S8 (i.e., radial- and axial-motion coil sets) arranged to, when energized, interact with the plunger, the first set of coils operative to provide an electric field to effect movement of the plunger in a linear (axial) mode (c.2, lines 51-56; c.3, lines 14-35), the second set of coils operative to effect movement of the plunger in a rotational mode (c.2, lines 43-50; c.3, lines 1-13); an amplifier (part of inverter with outputs A1-A8; Fig.4) coupled to the coils and operative to provide electrical energy to energize the coils; and a control system integrated with the amplifier (converter/decoder with input; Fig.4).

Kemmer does not teach: 1) a network interface operative to receive control information from the actuator; and 2) the control system and associated rotary-linear motor "integrated into an single module."

Regarding (1), Spinner teaches a distributed intelligence control system for controlling plural actuators 26 and respective intelligent actuator controllers 30 connected by connections 32 via a network bus 24, gateway 22 and Ethernet/LAN network 21 to a host control system 20 (Fig.1). Each intelligent actuator controller 30 is "preferably mounted on the body of the

actuator [26]" and is thus "integrated" with the actuator (c.3, lines 58-60; Fig.1). Further, each actuator controller 30 comprises a communications transceiver 72 (Fig.4). The communications transceiver 72 handles communications between the actuator communications interface of the gateway 22 and the controller processor section 70 (c.5, lines 44-50). Thus, each transceiver 72 comprises a "network interface" since communication passing from an actuator controller to the network 21 and host control system 20, or vice versa, travels through the transceiver. Note further that each transceiver 72 is integrated with an actuator controller 30 since it comprises one of five parts of the controller 30 (c.5, lines 39-44). An Ethernet/LAN network as in Spinner is desirable as a means of communication between a central host controller and a series of actuators (c.2, lines 49-52), with the "network interface" comprising transceiver 72 desirable as a means of handling that communication (c.5, lines 44-47).

Regarding (2), Mizutani teaches a servo motor integral with its control apparatus. Specifically, printed circuit board 58 is fitted to a portion extending in the radial direction of bearing 5 from the housing 51b and is loaded with power circuit 31 and signal processing circuit 24. A printed circuit board 60 is layered with the printed circuit 58 via a spacer 33 and is loaded with control circuit 32 and fixed to chassis 51 (c.6, lines 42-49). Among other advantages (c.11, lines 6-67), the integration of the control with the motor does not require sockets and terminals (c.8, lines 41-43); the heat generated by switching loss, etc., of the transistors in the power circuit may be transmitted to cooling fins, to improve cooling efficiency (c.8, lines 53-59); and water and/or oil is prevented from entering parts of the circuit (c.9, lines 16-20; 30-41).

It would have been obvious to one of ordinary skill at the time of the invention to modify Kemmer and provide: 1) a control system having a network interface per Spinner since the network interface would have been a desirable means of handling communication between a central host and an actuator; and 2) an integrated control system and associated rotary-linear motor integrated into an single module per Mizutani since this would have been desirable to facilitate assembly, improve cooling efficiency and prevent water and/or oil from entering.

Regarding claim 2, Kemmer teaches that more than one magnet or "rotor" may be provided for more torque (c.5, lines 10-15).

Regarding claim 3, Kemmer's set of coils S1-S8 provide an electric field to effect movement of the plunger in a linear (axial) mode (c.3, lines 14-35) and thus comprise a first set of coils which apply an axial force on the magnets; while the set of coils S1 comprises a second set arranged to apply a tangential force on the magnets to move the plunger in a rotational mode (c.2, lines 43-50; c.3, lines 1-13).

Regarding claim 4, the motor support (cylindrical liner 7 and flange 9) in Kemmer comprises a bearing support and a housing that define a well operative to receive the plunger (rotor 3), the plunger being supported by bearings 4 located between the plunger and the bearing support, such that the plunger is axially movable along the longitudinal axis between a retracted position and an extended position and rotatable about the longitudinal axis (Fig.1).

Regarding claim 6, Kemmer teaches eight amplifiers including first and second amplifiers (Fig.4) each with respective outputs A1, A2 to respective coils S1, S2 (Fig.2) via transistors T1 and T2.

Regarding claims 7-8, in Spinner note host computer 20 which bi-directionally communicates via network 21 with actuator controllers 30 (abstract). A network protocol such as the "LonTalk" protocol of Echelon Corp. is used (c.5, line 66-c.6, line 4). The control information includes program data comprising "tuning parameters" (c.6, lines 43-59) which define the behavior of the control algorithms, i.e., the operating parameters of the rotary-linear actuator system are programmed based on the program data or "tuning parameters".

Regarding claims 9-10, the actuator controllers in Spinner comprise "sensors" since they transmit actuator information, e.g., position and status, to the host control system. The host includes program data operative to program operating characteristics of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data from the integrated rotary-linear actuator system (c.7, line 9-c.8, line 34).

Regarding claim 17, Spinner includes a method for controlling plural actuators including a network interface to enable communication over an associated network, the method comprising: receiving control information (from host 20) at the network interface (transceiver) 72 of the integrated rotary-linear actuator system via the associated network (Ethernet or LAN) 20; and programming operating parameters of the rotary-linear actuator system based on the received control information (various parameters of the control algorithm are shown in Spinner c.6, lines 44+).

Regarding claim 18, the transceiver 72 comprising the network interface of Spinner uses a network protocol such as the "LonTalk" protocol of Echelon Corp. (c.5, line 66-c.6, line 4).

Regarding claim 19, the control information in Spinner includes program data comprising "tuning parameters" (c.6, lines 43-59) which define the behavior of the control algorithms, i.e., the operating parameters of the rotary-linear actuator system are programmed based on the program data or "tuning parameters".

Regarding claim 20, Spinner's system senses conditions, e.g. position and state, of the actuators and provides a sensor signal indicative of the sensed at least one condition, which is sent from the actuator to the computer 20 via the network interface 72 using the network protocol.

Regarding claim 21, the control information includes program data or "tuning parameters" given in c.6, line 43-59 to program the operating parameters of at least part of the actuator based on evaluation of the condition data sent from the actuator.

B. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174) and Mizutani (US 5,532,533). Sudo teaches a rotary-linear actuator system, comprising: a motor support (stationary member 12) having a well (Fig.2); a plunger (floating member 14) supported via (electromagnetic) bearings for movement in at least part of the well so as to enable axial movement of the plunger relative to the well along a longitudinal axis of the plunger and rotational movement of the plunger about the longitudinal axis; an array of magnets (34a-34d/36a-36d) associated with the plunger (Fig.2), wherein half of the magnets are oriented such that their north poles point radially outward and the other half radially inward (Fig.7); a first set of coils 42/44 (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides an axial force to drive the plunger element in a linear

mode (c.3, line 32); a second set of coils 50a-50h (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides a tangential force to drive the plunger element in a rotational mode (c.3, line 47); and an integrated control system 66 which selectively energizes the first and second sets of coils to effect movement of the plunger in at least one of the linear and rotational modes.

Sudo does not: 1) have a network interface operative to receive control information via an associated network, or 2) "integrate" the control system and an associated rotary-linear motor "into an single module."

Regarding (1), Spinner teaches a distributed intelligence control system for controlling plural actuators 26 and respective intelligent actuator controllers 30 connected by connections 32 via a network bus 24, gateway 22 and Ethernet/LAN network 21 to a host control system 20 (Fig.1). Each intelligent actuator controller 30 is "preferably mounted on the body of the actuator [26]" and is thus "integrated" with the actuator (c.3, lines 58-60; Fig.1). Further, each actuator controller 30 comprises a communications transceiver 72 (Fig.4). The communications transceiver 72 handles communications between the actuator communications interface of the gateway 22 and the controller processor section 70 (c.5, lines 44-50). Thus, each transceiver 72 comprises a "network interface" since communication passing from an actuator controller to the network 21 and host control system 20, or vice versa, travels through the transceiver. Note further that each transceiver 72 is integrated with an actuator controller 30 since it comprises one of five parts of the controller 30 (c.5, lines 39-44). An Ethernet/LAN network as in Spinner is desirable as a means of communication between a central host controller and a series of actuators (c.2, lines 49-52), with the "network interface"

comprising transceiver 72 desirable as a means of handling that communication (c.5, lines 44-47).

Regarding (2), Mizutani teaches a servo motor integral with its control apparatus. Specifically, printed circuit board 58 is fitted to a portion extending in the radial direction of bearing 5 from the housing 51b and is loaded with power circuit 31 and signal processing circuit 24. A printed circuit board 60 is layered with the printed circuit 58 via a spacer 33 and is loaded with control circuit 32 and fixed to chassis 51 (c.6, lines 42-49). Among other advantages (c.11, lines 6-67), the integration of the control with the motor does not require sockets and terminals (c.8, lines 41-43); the heat generated by switching loss, etc., of the transistors in the power circuit may be transmitted to cooling fins, to improve cooling efficiency (c.8, lines 53-59); and water and/or oil is prevented from entering parts of the circuit (c.9, lines 16-20; 30-41).

It would have been obvious to one of ordinary skill at the time of the invention to modify Sudo and provide: 1) a network interface per Spinner since this would have been a desirable means of handling communication between a central host and an actuator; and 2) an integrated control system and associated rotary-linear motor into an single module per Mizutani since this would have been desirable to facilitate assembly, improve cooling efficiency and prevent water and/or oil from entering.

Regarding claim 12, the communications interface of Spinner including transceiver 72 uses a network protocol such as the "LonTalk" protocol of Echelon Corp. (c.5, line 66-c.6, line 4).

Regarding claim 13, the control information in Spinner's system includes program data, the operating parameters of the rotary-linear actuator system being programmed based on the program data (c.6, lines 5+).

Regarding claim 14, Spinner's system senses conditions, e.g. position and state status, of the actuators and provides a sensor signal indicative of the sensed at least one condition (c.7, lines 9-29), which is sent from the actuator to the computer 20 via the network interface 72 and gateway 22 using the network protocol (c.5, line 66-c.6, line 4).

Regarding claim 15, the control information in Spinner's system includes program data (algorithm parameters given in c.6, lines 44-60) to program the operating parameters of at least part of the actuator based on evaluation of the condition data sent from the actuator.

C. Claims 1-4, 6-10 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174), Gerard (US 4,751,437) and Mizutani (US 5,532,533). Sudo teaches a rotary-linear actuator system, comprising: a motor support (stationary member 12) having a well (Fig.2); a plunger (floating member 14) supported for movement in at least part of the well so as to enable axial movement of the plunger relative to the well along a longitudinal axis of the plunger and rotational movement of the plunger about the longitudinal axis; an array of magnets (34a-34d/36a-36d) associated with the plunger (Fig.2); a first set of coils 42/44 (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides an axial force to drive the plunger element in a linear mode (c.3, line 32); a second set of coils 50a-50h (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides a tangential force to drive the plunger element in a rotational mode (c.3,

line 47); and an integrated control system 66 which selectively energizes the first and second sets of coils to effect movement of the plunger in at least one of the linear and rotational modes. Regarding the means plus function clauses in claim 16, Sudo teaches a means for supporting the motor and means for supporting the (electromagnetic) bearing comprising stationary member 12 (Fig.2), the means for supporting the motor defining a well (Fig.2), in which electromagnetic bearings (magnets 34a-34d/36a-36d) are supported (Fig.2); means for moving a stage (32) comprising plunger or floating member 14 received in the well (Fig.2); the plunger 14 axially- and rotatably-moveable along its longitudinal axis (c.3, lines 25-38); means for providing a magnetic field comprising magnets 34a-34d/36a-36d arranged on the means for moving the stage (plunger) 14; and means for applying a substantially axial and tangential force on the magnet and driving the stage linearly and rotationally, respectively, comprising coils 42/44 and 50a-50h (c.3, line 32-47).

Sudo does not teach: 1) a network interface operative to receive control information via an associated network (claim 1) or "plural motors" and "control means including means for interfacing with an associated network and receiving control information to program the control means to control the means for amplifying to selectively activate the means for applying, and transmitting diagnostic information to at least one computer associated with the network" (claim 16); 2) an amplifier; and 3) a control system "integrate[d]" with the associated rotary-linear motor "into an single module".

Regarding (1), Spinner teaches a distributed intelligence control system for controlling plural actuators 26 and respective intelligent actuator controllers 30 connected by connections 32 via a network bus 24, gateway 22 and Ethernet/LAN network 21 to a host control system

20 (Fig.1). Each intelligent actuator controller 30 is "preferably mounted on the body of the actuator [26]" and is thus "integrated" with the actuator (c.3, lines 58-60; Fig.1). Further, each actuator controller 30 comprises a communications transceiver 72 (Fig.4). The communications transceiver 72 handles communications between the actuator communications interface of the gateway 22 and the controller processor section 70 (c.5, lines 44-50). Thus, each transceiver 72 comprises a "network interface" since communication passing from an actuator controller to the network 21 and host control system 20, or vice versa, travels through the transceiver. Note further that each transceiver 72 is integrated with an actuator controller 30 since it comprises one of five parts of the controller 30 (c.5, lines 39-44). An Ethernet/LAN network as in Spinner is desirable as a means of communication between a central host controller and a series of actuators (c.2, lines 49-52), with the "network interface" comprising transceiver 72 desirable as a means of handling that communication (c.5, lines 44-47). Regarding claim 16, Spinner further teaches plural actuators 26 mounted on support (slice lip) 28 (Fig.2, c.3, lines 51-52) with, as noted above, plural actuators 26 and respective intelligent actuator control means 30 including means for interfacing with an associated network 21 and host control system 20 comprising transceivers 72 (Fig.1). Various diagnostics (parameters, c.6, lines 19-61, or other information, c.7, lines 9-28) are transmitted by the control means 30 to the gateway 22 and host control 20.

Regarding (2), Gerard teaches a linear motor and servo loop drive circuit (Fig.1) including an amplifier 40 which supplies current to the coil 28 (c.3, lines 40-41).

Regarding (3), Mizutani teaches a servo motor integral with its control apparatus. Specifically, printed circuit board 58 is fitted to a portion extending in the radial direction of

bearing 5 from the housing 51b and is loaded with power circuit 31 and signal processing circuit 24. A printed circuit board 60 is layered with the printed circuit 58 via a spacer 33 and is loaded with control circuit 32 and fixed to chassis 51 (c.6, lines 42-49). Among other advantages (c.11, lines 6-67), the integration of the control with the motor does not require sockets and terminals (c.8, lines 41-43); the heat generated by switching loss, etc., of the transistors in the power circuit may be transmitted to cooling fins, to improve cooling efficiency (c.8, lines 53-59); and water and/or oil is prevented from entering parts of the circuit (c.9, lines 16-20; 30-41).

It would have been obvious to one of ordinary skill at the time of the invention to modify Sudo and provide: 1) a "network interface" (claim 1) including "means for interfacing with an associated network and receiving control information to program the control means to control the means for amplifying to selectively activate the means for applying, and transmitting diagnostic information to at least one computer associated with the network" (claim 16) per Spinner since this would have been a desirable means of handling communication between a central host and an actuator; 2) an amplifier in the drive control per Gerard since amplifiers would have been desirable to supply current to the coils; and 3) a control system integrated with the associated rotary-linear motor into an single module per Mizutani since this would have been desirable to facilitate assembly, improve cooling efficiency and prevent water and/or oil from entering.

Regarding claims 2-3, see the paragraph above describing these features in Sudo.

Regarding claim 4, note bearing in Sudo comprises a magnetic bearing formed by the coils and magnet arrays.

Regarding claim 6, in the combination, plural amplifiers per Gerard would be used to drive the plural coils disclosed in Sudo.

Regarding claims 7-8 and 18-19, in Spinner, note host computer 20 which bi-directionally communicates via network 21 with actuator controllers 30 (abstract). A network protocol such as the "LonTalk" protocol of Echelon Corp. is used (c.5, line 66-c.6, line 4). The control information includes program data comprising "tuning parameters" (c.6, lines 43-59) which define the behavior of the control algorithms, i.e., the operating parameters of the rotary-linear actuator system are programmed based on the program data or "tuning parameters".

Regarding claims 9-10 and 20-21, the actuator controllers in Spinner comprise "sensors" since they transmit actuator information, e.g., position and status, to the host control system. The host includes program data operative to program operating characteristics of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data from the integrated rotary-linear actuator system (c.7, line 9-c.8, line 34).

D. Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo in view of Horikoshi et al. (US 5,142,172), Gerard (US 4,751,437) and Spinner et al. (US 5,771,174). Sudo teaches an integrated rotary-linear actuator system, comprising: a plunger (floating member) 14 movable along and rotatable about a longitudinal axis extending through the plunger (Fig.10), wherein the plunger includes an inner 28 and an outer 26 cylindrical portion open at one end (see Fig.10) with permanent magnets 34a/36a and 100a/102a attached to the respective inner walls of the inner and outer cylindrical portions 28 and 26 (Fig.10); and a coil system having coils 42/44/50a/50b (Fig.10) arranged to, when

energized, interact with the magnets 34a/36a/100a/102a attached to the plunger 14 to move the plunger in rotational mode and linear modes.

Sudo does not teach: 1) air bearings supporting the plunger against an actuator support stage; 2) an amplifier coupled to the coils to provide electric energy to the coils; and 3) a control system integrated into a single module with an associated rotary-linear actuator having a network interface for receiving and transmitting at least one of control and diagnostic information to an associated network.

Regarding (1), Horikoshi teaches a gas bearing 1 used to support a shaft 3 of a voice coil 13 at a desired position (c.1, lines 36-42).

Regarding (2), Gerard teaches a linear motor and servo loop drive circuit (Fig.1) including an amplifier 40 which supplies current to the coil 28 (c.3, lines 40-41).

Regarding (3), Spinner teaches a distributed intelligence control system for controlling plural actuators 26 and respective intelligent actuator controllers 30 connected by connections 32 via a network bus 24, gateway 22 and Ethernet/LAN network 21 to a host control system 20 (Fig.1). Each intelligent actuator controller 30 is "preferably mounted on the body of the actuator [26]" and is thus "integrated" with the actuator (c.3, lines 58-60; Fig.1). Further, each actuator controller 30 comprises a communications transceiver 72 (Fig.4). The communications transceiver 72 handles communications between the actuator communications interface of the gateway 22 and the controller processor section 70 (c.5, lines 44-50). Thus, each transceiver 72 comprises a "network interface" since communication passing from an actuator controller to the network 21 and host control system 20, or vice versa, travels through the transceiver. Note further that each transceiver 72 is integrated with an actuator controller

30 since it comprises one of five parts of the controller 30 (c.5, lines 39-44). An Ethernet/LAN network as in Spinner is desirable as a means of communication between a central host controller and a series of actuators (c.2, lines 49-52), with the "network interface" comprising transceiver 72 desirable as a means of handling that communication (c.5, lines 44-47).

It would have been obvious to one of ordinary skill at the time of the invention to modify Sudo and provide: 1) a gas bearing per Horikoshi since this would have been desirable to support the plunger at a desired position; 2) an amplifier in the drive control per Gerard since amplifiers would have been desirable to supply current to the coils; and 3) a network interface per Spinner since this would have been a desirable means of handling communication between a central host and an actuator.

Regarding claim 23, each actuator motor 26 in Spinner includes an integrated linear variable differential transformer 38, a well-known displacement measuring device (c.4, lines 4-6). This would determine the position of the plunger.

Regarding claims 24 and 26, Spinner includes a computer (host control system) 20 which communicates control information to the control system of each actuator via the network (Ethernet or LAN) 21.

Regarding claims 25 and 27, Spinner's host computer 20 retrieves diagnostic information of the actuators via the network (c.3, lines 46-50 & c.4, lines 23-30), and also "calibrates" the actuators by calculating new setpoint parameters and transmitting these to the actuators (c.4, lines 43-47).

(10) Response to Argument

Applicant's sole argument is that the secondary reference Spinner does not teach a network interface that forms a constituent part of the integrate control and rotary-linear unit (p.9, lines 1-2 of Appeal Brief). In particular, applicant argues that Spinner's "network interface" or "gateway" 22 is a distinct and separate entity from the integrated control system 30 (Spinner Fig.1). Since this is the only issue currently in contention, applicant does not make any other arguments.

However, as set forth in the new grounds of rejection, Spinner teaches that each controller 30 comprises a communications transceiver 72, one of five sections of the controller 30, as seen in Fig.3 (c.5, lines 39-44). The transceiver 72 comprises a "network interface" since communication passing from an actuator controller to the network 21 and host control system 20, or vice versa, travels through the transceiver, i.e., the controller 30 "interfaces" with the gateway 22 (and hence, network 21) via the transceiver 72 by means of a protocol (c.5, line 66-c.6, line 4). Spinner further teaches that each actuator controller 30 is "preferably mounted on the body of the actuator [26]" (c.3, lines 58-60; Fig.1). Thus, it is submitted that Spinner does teach a controller including a network interface, the controller further being integrated with an actuator.

Mizutani specifically sets forth motivation for integration of a controller with an actuator (c.11, lines 6-67), i.e., elimination of the requirement for sockets and terminals (c.8, lines 41-43); improved cooling efficiency (c.8, lines 53-59); and prevention of water and/or oil from entering parts of the control circuit (c.9, lines 16-20; 30-41).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Primary Examiner
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bsm
December 8, 2004

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New grounds of rejection approved
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